

## Mercury Levels in Treatment Plant Sludge Down Significantly

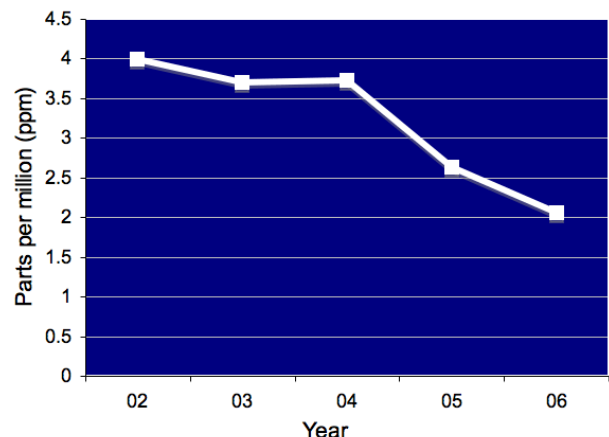
*Dental Amalgam Initiative Credited for Recent Reductions*

Since January 2004, when the Department of Environmental Protection (MassDEP) and the Massachusetts Dental Society began promoting the installation of mercury amalgam separators in dental offices, mercury levels in wastewater sludge have dropped dramatically.

At the Massachusetts Water Resources Authority (MWRA) treatment plant on Deer Island in Boston Harbor, mercury levels have been cut nearly in half during that time, and are down by as much as three-quarters from a decade ago. The current level of about 2 parts per million (ppm) is 500 percent

better than the state requires and 800 percent below U.S. Environmental Protection Agency (EPA) standards.

**Yearly Average Mercury levels in MWRA Sludge**



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Even before the dental amalgam initiative, MWRA had been working aggressively with hospitals and other facilities to reduce the amount of mercury entering the greater Boston sewer system. As a result, its sludge was already well within government safety limits for use as a fertilizer and soil amendment. Today, with mercury levels down further, MWRA sludge is an even more attractive option for gardeners and landscapers.

When the mercury amalgam initiative began, dental facilities were seen as a significant yet controllable source of mercury. State officials estimated that amalgam waste accounted for half or more of the total mercury found in municipal wastewater across Massachusetts.

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Much of this mercury – estimated at several hundred pounds per year – was being released to the environment when sewage sludge was incinerated or reused, or treated wastewater that still contained traces of mercury was discharged from treatment plants. Considering that one pound of mercury has the potential to render 2 million pounds of fish unsafe to eat, hundreds of pounds were a significant concern.

The type of mercury found in fish is extremely toxic. Developing fetuses and children are especially sensitive to mercury's harmful effects, including brain damage that can potentially affect development and learning. Each year, more than 400,000 newborns nationally – 8,000 of them in Massachusetts – are at increased risk because their mothers have been exposed to mercury, mostly from eating contaminated fish.

In Massachusetts, native freshwater fish are frequently so contaminated with mercury that the state Department of Public Health advises women who are pregnant or may become pregnant, as well as nursing mothers and children under 12, to avoid eating native fish caught anywhere in the state. More than 40 percent of the lakes and ponds tested have enough mercury in one or more fish species to prompt consumption advisories for everybody.

The aim of the amalgam separator program was to increase the use of pollution controls to effectively reduce mercury discharges from dental offices by up to 95 percent. Nearly 3,000 Massachusetts dentists either voluntarily installed these systems before 2006, or have complied with the regulations requiring amalgam separators that are now in effect.

Massachusetts continues to lead the nation in keeping mercury out of the environment. In-state releases are down by more than 60 percent since the late 1990s, thanks in large measure to regulatory efforts that cut mercury emissions from trash combustion by more than 90 percent and eliminated emissions from medical waste incinerators entirely.

More recently, MassDEP has implemented tough new regulations requiring four coal-burning power plants to control mercury emissions from coal-burning power plants by up to 95 percent in the next five years.

And just this fall, MassDEP and the state Department of Education began implementing the new Massachusetts Mercury Management Act, which bans the sale of specific commercial and consumer products, and requires schools to stop buying mercury-containing items.

But more still needs to be done nationally and globally, since the vast majority of mercury still finding its way into Massachusetts lakes and streams originates elsewhere. The Commonwealth and 22 other states have rejected a U.S. Environmental Protection Agency (EPA) decision to let companies buy and sell rights to emit mercury as a marketplace commodity, and are working together to push strong national mercury reduction measures.

To learn more about mercury, its environmental and public health impacts, and what state government is doing to reduce and ultimately eliminate the threat, visit: [www.mass.gov/dep/toxics/stypes/hgres.htm](http://www.mass.gov/dep/toxics/stypes/hgres.htm).

## **Enforcement Deters Violations, Delivers Environmental Justice**

*Number of Cases, Size of Penalties Tell Only Part of the Story*

The Massachusetts Department of Environmental Protection (MassDEP) not only initiated more cases and assessed higher penalties against environmental violators in 2006, the agency also realized a solid return on investment in the form of a cleaner, healthier environment – particularly in communities where violations tend to be more common, and residents are at a higher level of risk.

In the last four years, the number of higher-level enforcement cases initiated by MassDEP has risen from 660 to nearly 1,100 annually. During the same timeframe, the amount of penalties assessed by the agency against environmental violators has nearly doubled, jumping from \$3.4 million to \$6.6 million.

### **Effective Deterrence**

While it is always better when those subject to environmental regulations simply comply, a strong enforcement program plays a critical role in discouraging future violations and turning past offenses into environmental gains.

Facing a greater likelihood of being caught and then paying dearly for it, would-be scofflaws are increasingly thinking twice about trying to circumvent environmental laws in Massachusetts. Meanwhile, violators MassDEP has pursued for damaging natural resources and placing people and property in harm's way have not only been made to pay financially, but also to right past wrongs.

Across Massachusetts in the last fiscal year alone, violators who contaminated land, fouled water, polluted air and placed public health at risk were required to remove 36,000 gallons of chemicals from hazardous waste sites, cleaned 760,000 gallons of contaminated groundwater, excavated 88,000 cubic yards of contaminated soil for proper management, eliminated tons of toxic and smog-causing emissions from the air, and safely completed asbestos abatement projects in hundreds of commercial, industrial and residential buildings.

### **Environmental Justice**

MassDEP concentrates its investigations and enforcement actions not only where there is a higher potential for harm to the environment and risk to public health, but also where success can lead to the greatest good. This approach parallels the core principles of Environmental Justice (EJ).

The agency specifically targets EJ neighborhoods because they are generally located in close proximity to many of the state's abandoned and contaminated sites, power plants, and large factories. Most are densely populated urban areas with higher than average numbers of minority residents.

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These neighborhoods account for only 5 percent of the state's land area, but are home to nearly 29 percent of the Massachusetts population.

Illegal dumpers, in particular, prey on these areas. This is because they can access city neighborhoods easily by car or truck, and there is enough activity going on most of the time that their illegal activities escape notice.

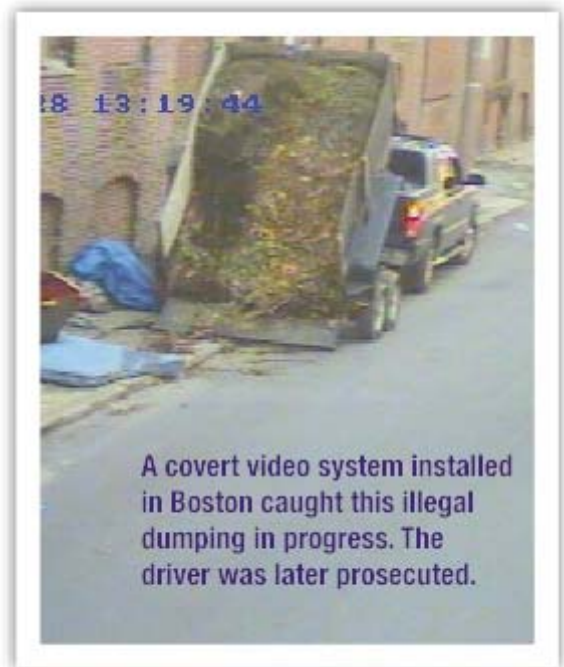
The material that "dump-and-run" violators leave behind at best creates an eyesore and at worst poses health and public safety risks, especially to neighborhood children. There are economic costs, as well. Property values decline and cleanup costs are inevitably passed along to taxpayers.

### **'Candid Camera' Initiative**

An example of how the MassDEP enforcement approach benefits EJ communities can be found in a recent effort to combat illegal dumping. In 2005 and 2006, five cities – Boston, Lawrence, Leominster, Lynn and Worcester – partnered with MassDEP and the state's Environmental Strike Force to install covert video surveillance equipment, which helped identify scores of violators who were subsequently prosecuted and penalized.

The success of this initiative has prompted an additional 20 communities to ask MassDEP for help in setting up similar efforts. Acting Commissioner Arleen O'Donnell recently announced an expansion of the program, adding six more camera systems to supplement the four now in use to improve the ability and reach of local enforcement officials to address this problem.

In 2007 and beyond, MassDEP will continue to look for new, innovative and flexible enforcement approaches that ensure a bottom line reflecting not just more enforcement cases and higher penalties, but a cleaner and healthier environment.



## New Studies Support MassDEP's Perchlorate Standards

Two new studies support the Massachusetts Department of Environmental Protection's 2 ppb drinking water standard for perchlorate, a chemical found in certain explosives, fireworks, flares and munitions.

Researchers at the Centers for Disease Control (CDC) sampled perchlorate levels in approximately 2,800 people as part of a national survey. Perchlorate was detected in most of the samples, indicating widespread exposures.



The CDC researchers also found an association between perchlorate levels and altered thyroid hormones in a subset of women with low dietary iodine intake. Thyroid hormones are necessary for normal growth and neurological (brain) development of fetuses, infants and children.

The CDC study, published by Environmental Health Perspectives in September 2006, supports the conclusions of MassDEP's determination that perchlorate levels in drinking water should not exceed 2 ppb in order to protect public health.

A second study by the National Science Foundation (NSF) found perchlorate in sodium hypochlorite (bleach) solutions used to disinfect drinking water. NSF estimated that the use of these solutions could lead to average perchlorate levels in drinking water of approximately 2 ppb.

This new information is consistent with data previously collected by MassDEP and supports the Department's risk management decision to set the perchlorate drinking water standard at 2 ppb.

The NSF and MassDEP data indicate that sodium hypochlorite used to disinfect water should be carefully managed to minimize perchlorate inputs. In particular, perchlorate levels were found to be higher in aged solutions and thus may be a concern for water systems that store sodium hypochlorite for longer periods of time (greater than 30 days), or have residual levels of aged chemical in storage tanks, which may contaminate new shipments. NSF is moving to require perchlorate standards for disinfection products.



## MassDEP Opens New Satellite Office on Cape Cod

### *State, Local Officials Attend Ribbon-Cutting Ceremony*

Regional efforts to preserve the natural heritage of Cape Cod and the islands received an important boost recently with the opening of a new Massachusetts Department of Environmental Protection (MassDEP) satellite office in Hyannis.

“We need access to where the action is; to people who are knowledgeable, motivated, and able to build grassroots efforts to deal with the issues here,” said acting MassDEP Commissioner Arleen O’Donnell, who presided over the November 29 ribbon-cutting and open house with Gary Moran, the agency’s Southeast Regional Director.

Rep. Sarah Peak, Rep. Jeffrey D. Perry, and Monica Mullen and Sue Rohrbach – aides to Sen. Therese Murray and Sen. Robert O’Leary, respectively – attended the ceremony and tour, as did a number of Cape Cod-based environmental and public health advocates. Rohrbach called the agency’s presence on the Cape “a visible symbol of all the great things we do” and was not alone in her enthusiasm.



*Photo left: MassDEP Southeast Regional Office Director Gary Moran (far right) is joined at the Cape Cod office opening by the staffers who will be based there, (left to right): Bob Murphy, Brian Dudley, Patti Kellogg, John Paino, and Beverly Hill.*



*Photo right: Shown at the ribbon-cutting ceremony for MassDEP's Cape Cod office are (left to right): Monika Mullen (from Sen. Therese Murray's office), Sarah Peake (from Rep. Shirley Gomes' office), Acting Commissioner Arleen O'Donnell cutting the ribbon, Rep. Jeff Perry and Susan Rohrbach (from Sen. Robert O'Leary's District office).*

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Dr. Anna Manatis of Cape Clean Air, who has pushed tougher emissions standards for power plants, said she was “ecstatic” and called the new MassDEP office “a positive force in the area.” Benjamin Bryant of the Coalition for Buzzards Bay agreed that the agency’s presence was a hopeful sign for ongoing efforts to protect the bay and surrounding waters.

Five full-time MassDEP employees are permanently assigned to the new Cape office: emergency responder Bob Murphy, Massachusetts Estuaries Project senior engineer Brian Dudley, watershed coordinator Patti Kellogg, air quality monitoring specialist John Paino, and office administrator Beverly Hill. Other staffers from the agency’s Southeast Regional Office in Lakeville will work from the Cape location on a rotating basis.

Acting Commissioner O’Donnell also said that MassDEP is particularly committed to working with and training local fire chiefs and first responders to ensure effective and coordinated response to potential oil spills. Each community on Buzzards Bay was provided with an emergency response trailer, containment booms, and other supplies under the Oil Spill Act of 2004.

The new office, located at 973 Iyannough Road (Route 132) in Hyannis, features two conference rooms, a file review area, and office space for permanent and rotating staff. Its main telephone number is 508-771-6003.

## MassDEP News Briefs

*Focus on Assisting at the Danvers Blast, Recycling on the MBTA, Big Dig Transit Commitments, Transitions and Awards*

**Environmental Response In Danvers:** MassDEP emergency responders helped play a key role in the aftermath of the chemical company explosion in Danversport during the early morning of November 22, conducting air and water sampling to check for chemical contamination. A massive blast from the CAI, Inc. and Arnel Company site caused a massive fire, sent volatile chemicals into the air and into the nearby rivers, and damaged up to 70 nearby homes. MassDEP On-Scene Coordinator John Fitzgerald and the ER staff conducted down-wind air samples that morning, and determined that the chemicals burned off by the fire were not impacting a nearby neighborhood. Samples from the nearby Waters and Danvers rivers showed that low amounts of volatiles and solvents had drained off the site. EPA Region 1 has taken environmental control of the site – with assistance from MassDEP – and continues to check air quality, while drums and tanks of chemicals are safely removed from the blast zone. MassDEP has also provided assistance with asbestos inspections in the damaged homes, and with the handling of the debris from the razed homes. For updated information on the Danvers blast site, turn to: <http://www.epa.gov/ne/danvers>.



*A massive blast and fire completely leveled two chemical companies on this Danversport site early November 22, and severely damaged 70 nearby homes. All that was left of CAI, Inc. and the Arnel Companies was burnt, twisted metal and chemical drums.*

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**America Recycles Day:** MassDEP celebrated America Recycles Day November 15 by supporting recycling efforts on the MBTA system and at the Statehouse. Acting Commissioner Arleen O'Donnell joined MBTA General Manager Dan Grabauskas and Jim Hunt from the City of Boston to unveil new paper recycling bins on the platforms at major commuter train stations such as North Station and Back Bay. The bins will be added at stations throughout the transit system, hiking the recycling of newspaper, CharlieTickets and other paper. Despite recycling success in Massachusetts, we still throw out over 1.5 million tons of recyclable paper each year. If we recycled just half of this paper, we would save nearly \$52 million in disposal costs. Later in the day, Commissioner O'Donnell joined Senator Pam Resor and Representative Frank Smizik at the Statehouse to promote the recycling of old cell phones. Nearly 100 retired wireless phones were collected and donated to help victims of domestic violence. To learn more about recycling, visit: [www.earth911.org](http://www.earth911.org).



*Photo left: MassDEP Acting Commissioner Arleen O'Donnell is joined by Abitibi Consolidated Area Manager Jason Bean (left), MBTA General Manager Daniel Grabauskas, and City of Boston Environmental Chief James Hunt (right) on the North Station commuter rail platform to announce the placement of paper recycling bins within transit stations across the MBTA system.*



*Photo right: MassDEP Acting Commissioner Arleen O'Donnell (left) marked America Recycles Day at the Statehouse by assisting Rep. Frank Smizik and Sen. Pam Resor (right) in their efforts to recycle retired cell phones and donate them to domestic violence shelters.*

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**Big Dig Transit Commitments:** The Commonwealth has reached an agreement with the Conservation Law Foundation that will move a list of planned public transit projects ahead. As part of the lawsuit settlement, state transportation officials have agreed to design a new tunnel connecting the Blue Line to the Red Line at Charles/MGH station. The agreement also guarantees that the MBTA will extend the Green Line to Somerville and Medford, add 1,000 parking spaces at commuter rail stations, add stops on the Fairmount commuter line in Roxbury, Mattapan and Dorchester, require the completion of the Greenbush commuter rail line from the South Shore, and complete the modernization and platform lengthening of the Blue Line, all as mitigation for the construction of the Big Dig through Boston. These projects will provide more air emission reductions than the projects initially agreed to in the early 1990s when the Big Dig was begun. The agreement sets interim and final deadlines for the design and completion of the projects.

**New Secretary Named:** Governor Deval Patrick has selected Ian Bowles as the new Secretary of Energy and Environmental Affairs, replacing Robert W. Golledge, Jr. Before becoming Secretary, Bowles was President and CEO of MassINC and publisher of CommonWealth magazine. He served in the Clinton Administration as Senior Director for Global Environmental Affairs at the National Security Council and as Associate Director of the White House Council on Environmental Quality. Golledge left the EOEa Secretary post to become country director in Ghana for the Peace Corps. Golledge had been commissioner of MassDEP for over three years before accepting the EOEa post last August. He had previously spent two years as a Peace Corps volunteer in Costa Rica. As country director, he will oversee 175 Peace Corps volunteers in the West African country. After attending late-January training in Washington, D.C., he will be moving to Ghana in late February with his wife and three children.

**Regulator of the Year:** Janine Commerford, assistant commissioner of the Bureau of Waste Site Cleanup, has been named “Regulator of the Year” by the License Site Professional Association at the 13th Annual Dinner Meeting in Westborough. The plaque lauded Janine for “effectively balancing the needs and objectives of government, the private sector and the environment.”

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**MassDEP Debuts Brownfields Video:** Boston hosted the 2006 national Brownfields Conference in November, and MassDEP joined MassDevelopment and the federal EPA Region 1 in hosting the conference, which drew nearly 6,000 waste site professionals and state officials from across the country. During the conference, MassDEP debuted a new video, entitled “The Massachusetts Brownfields Revolution: Building on History.” The video focuses on the successful reuse and redevelopment of six brownfields sites: the new National Basketball Association Hall of Fame in Springfield; the Massachusetts Museum of Contemporary Art in North Adams; North Common riverfront park in Lawrence; the Cummings Center in Beverly; Sid Wainer & Son greenhouses in New Bedford; and the Kendall Square/Genzyme Project in Cambridge. Video clips from the video can be viewed at: [www.mass.gov/dep/cleanup/brsuc.htm](http://www.mass.gov/dep/cleanup/brsuc.htm).



*Staffers Mark Baldi (left) and Andrew Loew (right) talked to a visitor to MassDEP's booth at the 2006 national Brownfields Conference in the Boston Convention Center. The conference saw the debut of MassDEP's video "Building on History: Brownfields in Massachusetts," which focused on statewide success stories.*



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